INSURANCE AND BUSINESS PROFIT.

THERE is more in the theory of insurance than has been expressed even by recent and acute discussions of the subject. Professor Mangoldt in Germany and Mr. Frederick B. Hawley in this country have made a definite contribution to our knowledge of the principles governing business risk and its reward. Working independently, they have reached one conclusion that cannot be overthrown. In a sense there is a net gain realized from risk-taking. Men do not hazard their capital for an amount of annual gains that in a long term of years will just offset their losses. They demand more than this, and get it. If the chance of losing one's entire capital in a year be as one in a hundred, the natural offset for this hazard will be a gain of more than one per cent. of the capital exposed. If, of a hundred men engaged in a particular business, one fails each year, the ninty-nine will get enough to more than make good, to the group as a whole, the destruction of capital entailed by the single failure. The wealth represented in this department of business is not only kept intact, but is increased, by virtue of a gain that is the direct reward of risk-carrying. To every other industry, and therefore to society as a whole, there accrues each year an accession of wealth that is the offset for perils encountered. Business repays men, not only for their labors, but for their fears.

Is this equivalent to saying that true business profit is resolvable into an offset for risk? Are these writers correct in referring to this cause the whole gains of the *entrepreneur*, or even a part of them? There is no difficulty in separating from the whole income of society a gain to which the term "profit" may be accurately applied.

Defray all the expenses of bringing a product into existence, sell the article for what you can get, and, if you have anything more in your hands than you had at the beginning of the operation, you have received a true profit. It is a mercantile margin,—an excess of an *entrepreneur's* receipts over all his disbursements. In society at this moment many men are realizing this gain, and the sum total of it all constitutes the true profit accruing to the business world. *The reward of risk-taking is no part of this particular sum.*

What I undertake to show is that the gain that is discussed in Mr. Hawley's recent articles in this *Journal* is not a part of a mercantile profit, as realized by the *entrepreneur:* it is realized by the capitalist as such. It is paid to the man who furnishes capital by the one who hires and uses it. Profit, in the strict sense, begins only when something comes to the *entrepreneur* over and above this disbursement and all others. Ultimate profits of this kind are realized in vast amounts here and there in the business world. In quantity they do not, in different cases, correspond to the degrees of risk encountered, but seem frequently to vary inversely as the dangers. A clear line of demarcation can be drawn between them and the sum that offsets hazard. This latter sum is wholly included in the amount that represents the true actuarial value of the risk incurred by capital; and in this fact lies the key to the solution of the problem.

The employer of capital must pay to the owner of it enough to offset the entire chance of personal harm that may befall the lender. This impending evil must be estimated according to recently discovered principles. We must gauge in some way the magnitude of the evil that befalls a man when his capital is swept away, and give him enough to induce him to take the chance of suffering that evil. It is in making the estimate of the personal harm signified by the loss that we apply in a new

way the principle of subjective value, which has lately removed so many difficulties of economic theory. Business risks are carried for their *subjective* actuarial value.

The certainty that in a year just one man in every hundred engaged in a particular business will fail is, to the group as a whole, equivalent to a continuous and uniform loss of one per cent. of the capital invested. This percentage expresses about what the group could afford to incur the risk for if the members were to unite in a mutual insurance company and, by a small annual payment from each one, make up to the unlucky member his lost capital. If after such an arrangement the chance of loss continued to be as one in a hundred, one per cent. would be the actuarial value of the risk.

The loss is not in fact pooled, but is borne by the one on whom, in the course of business, it falls. To that man the negative value of the risk is much greater than the above simple calculation would indicate. A large group of capitalists can carry the risk for about one per cent.,* but no one of them separately can do it. A particular man who exposes his entire capital to the danger of being swept away must have a gain large enough to offset the danger of suffering a very grave personal injury. This is not measured by the figure that expresses the amount of the capital itself, but by a much greater figure. One chance in a hundred of losing one's entire capital is a danger that, as has rightly been claimed, is not actually faced for one per cent. As can easily be shown, it ought not to be faced for that amount.

How is the value of this personal risk computed? Actually, by crude guesses, which in any one case are liable to vary much from a correct estimate. They probably average correctly enough; and they are undoubtedly

* Exact mathematics will show that the slight danger that losses may come together is an element that needs to be considered in a full study of the subject. This factor somewhat enhances the valuation of a risk, even when it is collectively carried.

made by a half unconscious application of a correct principle of value. It is easy to state this principle, and to show how the value of a risk would be computed if the calculation were made scientifically.

As a man acquires property, each increment is worth to him less than its predecessor. If a thousand dollars be taken as the unit of capital, the first unit that is acquired is the most useful of all. The second is of less importance, though it is still highly valued; and the tenth is, by subjective standards, worth less than any of the preceding nine.

How shall we estimate the injury inflicted on the man by the loss of a particular increment of capital? Clearly, by a similar calculation made in a reversed order. The last unit that has been acquired is the first to be lost. The final increment is to be treated as the first decrement, when the business begins to be unsuccessful. This unit, in the supposed case, is the least important of the ten. As the acquisitions of capital that have come to the man have benefited him successively less and less, so the losses that are supposed to follow hurt him more and more. A growing capital comes to be worth, to the owner himself, less and less per unit; and a dwindling fortune is worth more and more per unit. The harm inflicted by the destruction of one thousand dollars is comparatively small, that inflicted by the loss of a second thousand is greater, and the sweeping away of the last thousand hurts the man to a degree that is out of all proportion to the amount of wealth destroyed.

To measure the personal harm that is inflicted by the loss of a man's entire capital, we must gauge the importance to the man himself of each separate fraction of it, and add the figures that express the several measurements. If we use an ideal series of numbers to express the injuries that an owner suffers, as the different units of his capital are, one after another, swept away, we shall have a

basis for determining how large a gain he must count on annually if he is to expose himself to the risk of this personal harm.

Let us say that the loss of the first unit of capital that is sacrificed injures the owner to a degree that is expressed by the figure 1, that of the second to a degree expressed by 2, etc. The loss of the tenth and last unit of wealth will then harm the man to the extent of 10. In his subjective valuations, the sweeping away of all that he has will inflict on him an injury expressed by $1+2+3\ldots$ up to 10, or by the figure 55.

If, now, there is just one chance in a hundred that, during the coming business year, the man's entire capital will be swept away, he must anticipate a gain of one per cent., not of the ten units of his actual capital, but of the fifty-five units that represent its importance to himself. He must during successful years make five and a half per cent. of his capital as a compensation for exposing it to the chance of total loss.

In the technical terms of modern theory the case is thus. The annual gain that figures as an offset for the chance of loss has, dollar for dollar, a subjective utility that is on a par with that of the final and least important unit of capital acquired. This gain should normally be large enough to offset the risk of a loss that is gauged by the total utility of the several increments of the man's capital. If the fraction one-hundredth represents the chance of loss, if the figure ten represents the amount of capital exposed to this danger, and if the number fifty-five expresses the total subjective value of the capital, the gain that is to be rated as an offset for the risk is five and a half per cent. of the capital, ten. Where risk is not thrown on an insurance company or lightened by any kindred device, it is carried for its subjective value as thus computed.

In actual business the different increments of capital

employed in one establishment are exposed to varying degrees of hazard. There is more danger that one thousand dollars will be lost than there are that ten thousand or a hundred thousand will be so. This fact needs later to be considered, but does not affect the principle that we are now establishing. When all related facts are taken into account, it will be found, as it has been found in the simple case just examined, that the carrying of business risks normally yields a return that is equal to the true actuarial value of the hazard. This value is determined by multiplying the fraction that expresses the hazard by the figure representing the total utility of the capital that is exposed to it.*

Who gets the net gain that in a term of years accrues to the risk-taker? Is it the *entrepreneur?* If so, this sum is a part of the profits of business, though it is not the whole. Does the sum go to the capitalist? If so, it is as completely distinct from business profits as is interest or wages. There can be no question to whom the amount actually goes, if we adhere to the mode of analysis that separates the functions of the *entrepreneur*, the capitalist, and the worker. There can hardly be a question that in a study of distribution this separation of functions is essential. The usefulness of a separate study of each of the three functions, and of the income attaching to it, is not lessened by the fact that one man usually performs more than one of them. Working is one thing, lending "money" is another, and hiring men and money and setting them at work is still another. The three functions earn three incomes different in kind; and to speak of the functionaries as though they were wholly different men helps to distinguish the parts that, in their different capacities, they play.

We have used the term *entrepreneur* in an unusually

* Gambling risks are not referred to in this paper. Where the excitement of risk taking becomes an end in itself conduct is modified accordingly.

strict sense, to designate the man who co-ordinates capital and labor, without in his own proper capacity furnishing either of them. Yet our eyes are open to the fact that the living man who performs this function has to do other things also. It is only in the one limited capacity that we have called that of the *entrepreneur* that the man is confined to co-ordinating the elements furnished by others. Here he is so confined. In performing this one function, he contributes to industry nothing but relations. He connects labor and capital with each other in his own establishment. He connects this establishment with others, and makes it do its part in the general industrial system. He becomes the owner of the products of this industry, as they are turned out, and sells them in the market for what he can get. In acquiring this ownership, he must pay all the costs entailed in creating the product; and among the costs to be thus defrayed is the entire sum made over to the capitalist as an offset for risk.

It goes without saying that the hazard of business falls on the capitalist. The *entrepreneur*, as such, is empty-handed. No man can carry a risk who has nothing to lose. If the business goes to ruin, it is the furnisher of capital who suffers; and it is he who, at the outset, counts on an offset for the danger. In the course of business he gets the offset: he receives the actuarial value of risk of personal harm to which he subjects himself. He gets this sum as a part of his gross interest. The *entrepreneur* pays it as a part of his costs. To the one the reward of risk is an income: to the other it is an outgo that must be submitted to before he can become the complete owner of the product that he is to put on the market. If there is a true profit in the case, it comes after this demand has been met.

It is now time to take into account the merging of radically unlike functions in the same actual man. In business an *entrepreneur* usually has to be, to a certain extent,

both a capitalist and a worker. He has to furnish some capital and to do some of the work of management, which, of course, is a kind of labor. It is the theory of insurance that throws light on the nature of this union of functions.

It is a matter of common knowledge that an *entrepreneur* cannot, by an ordinary method, borrow all of his capital. He would have to get a loan, for a more or less hazardous purpose, entirely without security. If a near relative were induced to lend the capital, the loan would be a partial gift. The amount representing the actuarial value of the hazard encountered would be given outright. If A, a father, loans to B, a son, fifty thousand dollars for a term of ten years, in order that an enterprise may be prosecuted, the total value of the risks encountered in the time may well equal a half of the amount so loaned. Twenty-five thousand dollars are virtually given to the young *entrepreneur*.

Here appears the importance of the fact above noted, that all parts of a capital are not exposed to equal danger. There is a larger chance that ten thousand dollars will be sunk than there is that fifty thousand will be so. An *entrepreneur* who has some capital of his own puts that capital into the position of greatest danger. If a loss is encountered, it falls first on him, and only touches the borrowed capital after his own is exhausted. There is some risk impending over the borrowed amounts; and it is this which is estimated when the rate of interest on the loan is determined. In his capacity of capitalist the man who is also the *entrepreneur* must charge himself a higher rate.

There is a further reason why the *entrepreneur* needs to discharge a part of the capitalist's function. In his own capacity he is a risk-maker. It is he who gets "money" from places of safe deposit, and puts it into forms of investment from which there is a chance that the owner may

never get it out. If, in his other capacity, the man who is the *entrepreneur* furnishes the wealth that is in the greatest danger of vanishing, as the business proceeds, he will not select a business of a kind that is needlessly hazardous.

The *entrepreneur* needs to be a manager, and to personally do some of the most critically important work that is done in his establishment. The managing worker is a risk-reducer. It is he whose sagacity and faithfulness are to combat incidental dangers as they arise. What perils may not bad management create? What figure would express the actuarial value of the risk encountered by capital if, at the outset of the enterprise, it were known that the director of the work were to be a tyro or a knave? What expression can overstate the necessity that the director's intelligence should be of the highest order, and his faithfulness established by every test? Adequate tests cannot, in fact, be applied by one man to another; but, if the *entrepreneur*, who is also a capitalist, is to do an essential part of the work of management, and has his own capital to especially risk in the operation, there is a guaranty that he will test himself with some care, and will not undertake a function for which he is unfitted. Overweening self-confidence may still work disaster; but the range of it will be smaller than it would be if the risk-maker and manager had only the capital of other men in his hands.

A personal union of the *entrepreneur's* function with a certain part of the functions of the capitalist and the directive worker is called for by these considerations. They would seem to favor the old-fashioned type of business establishment. They would of themselves give a certain advantage to the individual who does business on a comparatively small scale, and manages as much as is possible of it himself. They would favor partnerships of working owners, rather than corporations in which the owners are largely absentees. If, in the course of years,

corporations were exposed to perils not encountered by partnerships and by individuals in independent business, it is the corporate capital that would tend to disappear, and the other that would tend to survive. An influence of this kind is certainly at work; and, if it were alone and unhindered, it would refill the world with old-time establishments instead of stock companies and mammoth consolidations.

Why is it, then, that actual evolution shows just the opposite tendency? Why does business run more and more to the corporate form, and why do great companies seem likely to sweep the field clear of rivals? Is it the mere advantage afforded by size?

This is the common answer; but it is an inadequate one. Size does much. If we classify the dangers that beset an enterprise as external and internal, the large establishment has the advantage as against the perils that originate without; but it is exposed to peculiar risks originating within. Its arch-enemies may be of its own household. There is the director of a certain familiar type to be reckoned with. Will he plunder the company? Will he treat the property of his stockholders as the pool from which to fill his personal bucket? The guaranty that he will not do so is largely a moral one; but it is strengthened if the director is too heavily interested in the corporation to make the depredations profitable.

The merging of ownership and management, which is secured in the case of the individual in independent business, needs to be secured in some adequate degree, even in the case of corporations, if they are not to succumb to internal perils. By a harsh process of survival this result is in the end secured in many a company that was originally organized in a hazardous way. The wrecker may end by owning the plant of the victimized corporation, and from that time onward may manage it legitimately. There may still be depredations to be made on other

establishments; but they will at least be made in the interest of the company that makes them. The road through directorial theft leads onward to a *quasi*-honesty.

Yet with all the power that comes from size, and with all the virtue that there is in the merger of ownership and management, the rate at which corporations are growing is only half accounted for. What is the undetected reason for this growth?

Evolution usually gives good results. It is a rule of organic life that the best type survives, however harsh may be the process of survival. To the eliminated types the law is not beneficent; but to the animate world it is so. In the business field, evolution gives us efficient tools, fruitful methods, and, in every department, efficient men. Strong manual workers, deft artisans, faithful custodians of goods, and skilful accountants, do a larger and larger share of the labor of the world; and they bequeath their several gifts to descendants.

In the higher fields of enterprise and management the law works in a rapid way; and it operates sweepingly in the competition that takes place between different types of business organization. Of all the fields in which the struggle for survival is in process, the one in which a quick and beneficent outcome can most surely be counted on is that in which an assorted lot of business establishments, as organized on various plans, are testing their efficiency in a competitive struggle. The stamp of assured success in such a contest puts the excellence of a type of organization beyond question.

It must have good risk-makers in its *entrepreneurs*, and good risk-reducers in its managers; but it must have, in addition to these, good loss-bearers in its capitalists. In this last fact lies the unanalyzed influence that favors corporations. It is decisively felt by practical men, but has not figured much in economic theory. Business losses need to be located where they will do the smallest amount of personal harm.

Fire insurance companies illustrate this principle. In view of one of their effects, they may be said to be created for the purpose of increasing the number of buildings destroyed by fire. "Insure your shop, and then watch it with less care," is the rule for honest men. "Insure your building, and then burn it," is a rule that is not unknown. The companies that carry the risk of fire must get, in the form of premiums, (1) enough to pay the true value of the normal hazard, (2) a sum covering the expenses of carrying on the business, and (3) an amount that will offset the abnormal hazard created by the laxity or dishonesty of insured owners. The latter two of these sums constitute an additional loss incurred by the community as a consequence of the insurance system. They represent an extra amount of goods put out of existence by reason of the fact that the owners of property transfer to others' shoulders the burden of risk from fire. Yet insurance is profitable. It creates value, in the true sense of that term.

It is in locating losses where they will fall on marginal increments of capital that the secret of the success of the insurance business lies. Enlarged losses, taken from the final and least important increments of the capital of many men, are borne more easily than the smaller losses that, in the absence of a system of insurance, would fall crushingly on a few men. The community knows that it is paying in premiums far more than it would otherwise lose by fire; and it rejoices, notwithstanding. The mass of its goods is smaller, but the personal service which they render is greater, by reason of that pooling of losses by which the marginal increments of many men's capital take the losses of business. It means a continuous and diffused burden rather than a concentrated and sweeping destruction.

It is the application of this principle in another connection that is now important. If all risks could be

distributed by means of insurance companies, the old-time partnership and the man in independent business would have a greatly improved chance of holding their own, as against corporations. The system of fire and marine insurance, as now established, is the salvation of many a small establishment. Losses by fire and shipwreck are daily occurring that would crush small proprietors if they fell upon them at once, instead of coming in the form of the small annual drain represented by insurance premiums. The paramount fact, however, is that the anticipation of such losses would keep the small proprietors out of the business field. It would act as a check on initiative action, and in this action lies the essence of social progress. The corporate form of business organization makes it possible to more widely distribute business losses than is practicable under other forms. The suppression of insurance companies would force even well-established business more and more into the corporate form. New business is more powerfully impelled in that direction by a similar influence.

Dangers from fire and tempest beset old and new establishments alike; but the new ones have special dangers to encounter, and against these insurance companies do not provide. They are the dynamic risks of business, or the perils that are incident to changes in the system. Static risks impend over a business system that retains from year to year what may be termed its structural form.* The danger of fire is static, since it would continue though no new product were ever put on the market, and though no new process of creating a product were ever introduced. The uncertainties that attend the introduction of a new process are dynamic, since they would have no existence if industry were to continue in a stationary state. There is a chance that the process may be mechanically defective:

*For a fuller statement of the distinction between static and dynamic conditions, see the issues of this *Journal* for April, 1891.

it may not create the desired commodity, as the projector of the enterprise expects. If, on the other hand, the dynamic change in question consists in offering some new commodity for the comfort or the pleasure of consumers, the public may fail to give to it the expected welcome. There is a chance that all that is invested in the enterprise may be sunk; and there is also a possibility that it may all return with a fourfold increase.

Now, by the projectors of the enterprise, the actuarial value of the risk has to be offset against that of the prospect of gain; and only if the latter exceeds the former is there an *entrepreneur's* profit in the case. The risk, however, impends over the capital used, and the offset for it goes to the owner of that capital. Over and above that offset is the return accruing to the projector.

Now, the value of the risk, as we have seen, has to be subjectively computed. It depends on the amount of personal harm that will be done if the enterprise fails. If one man loses his all in the venture, the harm is great: if many men stake their marginal funds and lose them, the damage done is far smaller. The division of initial risks reduces their actuarial value; and this fact makes it possible to realize an *entrepreneur's* profit from many an enterprise in which, if the capital were held by a single owner, the entire prospect of gain would barely offset the risk of disaster. Reduce by any means the subjective value of these risks of initiation, and you enlarge profits in many departments; but the more essential thing that you accomplish is to multiply projects. You make it practicable to take the forward steps that are necessary in the evolution of a more perfect economic system.

We may note the operation of this principle in a concrete case. Let us say that it has occurred to some one that electricity stored in large batteries is an agent well calculated to be used in moving ships and boats. The weight of the batteries, which precludes as yet the use

of them in road vehicles, is in their favor on the sea, since it operates as ballast. It will cost ten thousand dollars to test the question. If one man has just that amount, and loses it in making the test, the effect is to injure him, if our early illustration be used, to an extent of fifty-five units. If ten men contribute a thousand dollars each, and lose their contributions, the harm done to them all is only expressed by the figure ten. If, now, the gain, in case of success, will be fifty-five units, and if the chances of gain and of loss are even, a corporation with ten shareholders can make a handsome *entrepreneur's* profit from the venture. The individual, if he must personally carry the risk, will do well to let the experiment alone. For him there is no margin afforded above the value of the hazard.

The initiative work is becoming more and more essential, if the multiplying race of men is not to suffer for its fruitfulness. More and more important, therefore, will be hereafter the devices that reduce the true value of the risks of initiation. The reduction insures a profit, indeed, to a certain class; but the more essential effect of it is to stimulate the initiative process. Can we test the value that the community puts on this effect? Note what it endures, in order to get it; count the incidental costs of corporate growth. Proverbially soulless agents in power, massed wealth that corrupts law-makers and menaces the State, management preying on its own clientage,—such things are borne when the enduring of them means a vitalizing of industry by quickened progress. A more dynamic quality imparted to the economic system,—this is a result for which any price will be paid. It is gained whenever we reduce the initial terrors of business enterprises.

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